Ground Testers: Two Types

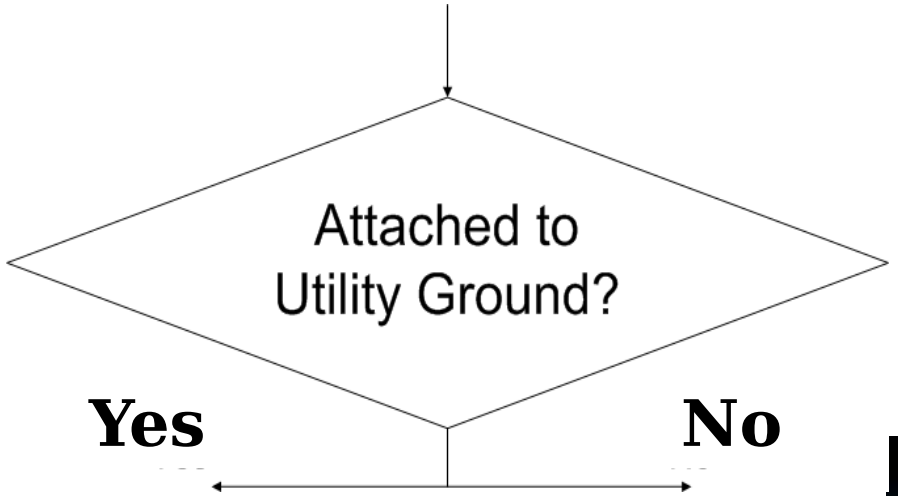
“Stakeless” Clamp-on method.

Which Ground Tester to Use?

Fall-of-Potential

Next

Ground Testers



Garrison MALS

Clamp-On

Deployed MALS

Fall-of-Potential

Ground Testers

Garrison MALS

have Ground systems that can use the utility ground as a reference.

Ground Tester, Clamp-on

Ground Testers

Deployed, Generator-Powered

Complex

Fall-of-Potential

Deployed with no good reference ground for the clamp-on tester.

Clamp-On Ground Tester

Clamp-on Tester: How it works

Ground Meter Reading (R

Rod Tested + Reference Ground

$$R = Rx + \frac{1}{\sum_{i=1}^{n} \frac{1}{Ri}}$$

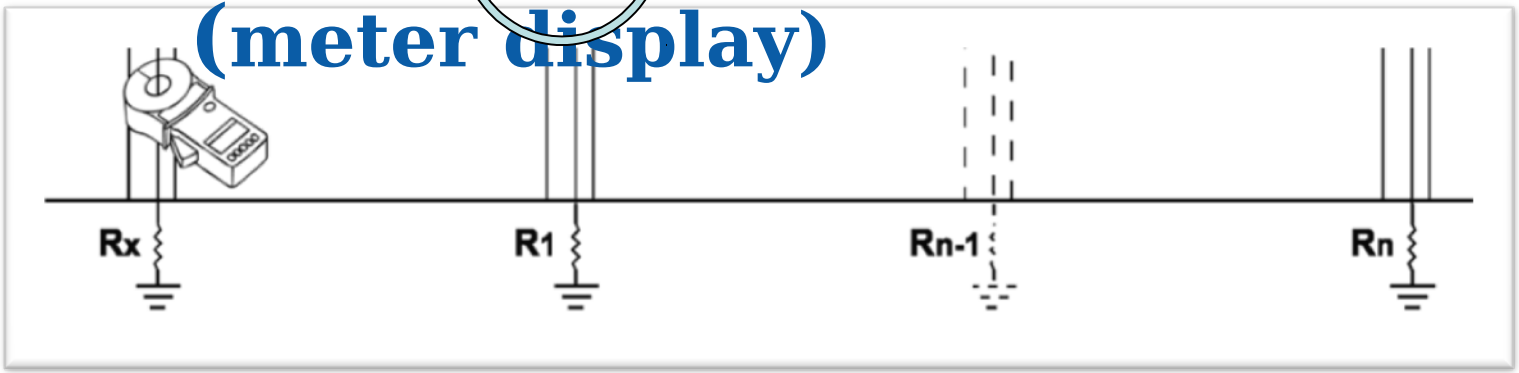
Clamp-On Ground Tester

$$R = 25 + \frac{1}{1/25 + 1/25 + 1/25 + 1/25 + 1/25 + 1/25 + 1/25 + 1/25}$$

Actual Resistance

$R = 25 + 8 = 33$ ohms

(meter display)



Example of *Poor* Ground Reference (3 rods)

Clamp-On Ground Tester

Clamp-on Tester: How it works

Ground Meter Reading (R
Rod Tested + Reference
Ground

$$R = Rx + \frac{1}{\sum_{i=1}^{n} \frac{1}{Ri}}$$

If Reference = ~1 ohm, then R ~ Rx

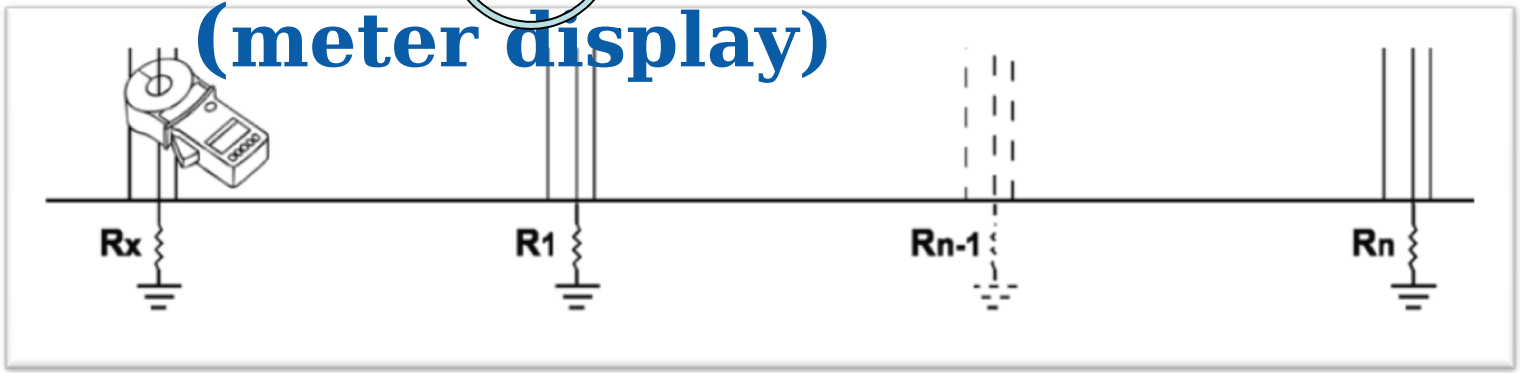
Clamp-On Ground Tester

Actual Resistance

$$R = 25 + \frac{1}{\frac{1}{25\text{ohm}} (\text{x } 25 \text{ rods})}$$

$$R = 25 + 1 = 26 \text{ ohms}$$

(meter display)



Example of *Good* Ground Reference (25 rods)

Ground Testers

Deployed, Generator-Powered

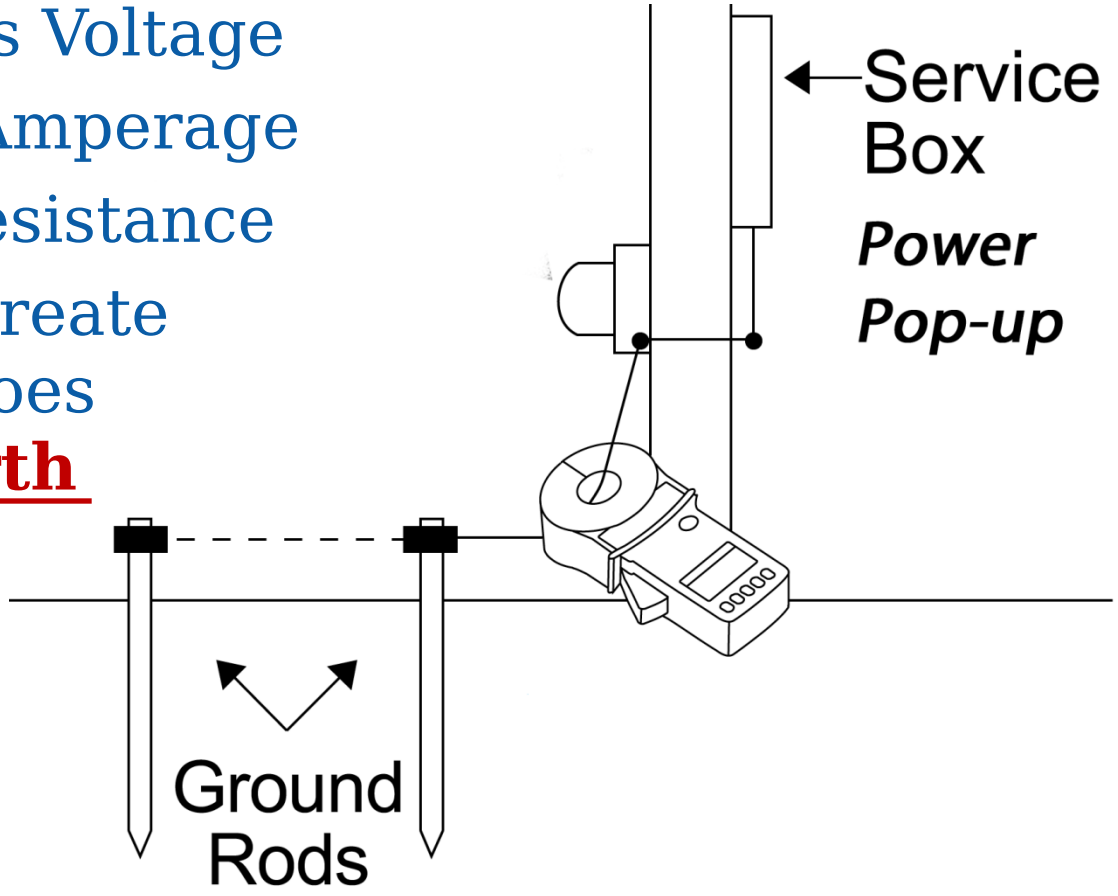
Complex

Fall-of-Potential

Deployed with no good reference ground for the clamp-on tester.

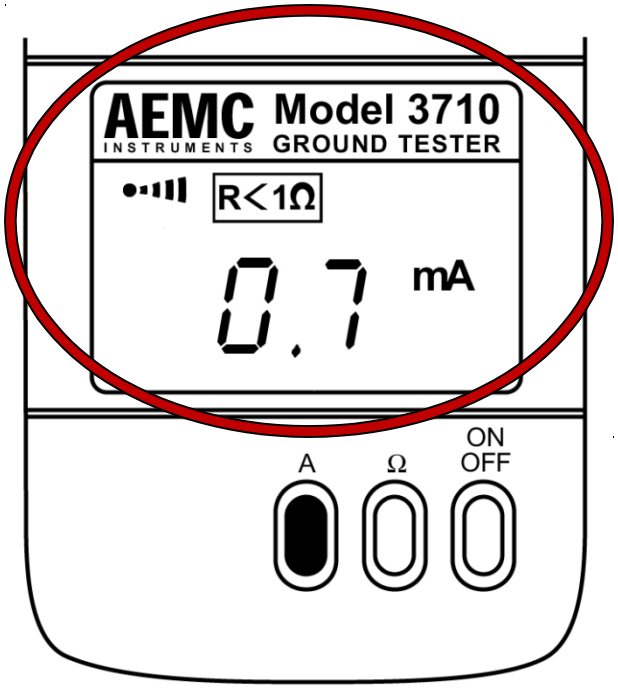
Clamp-On Ground Tester: Operation

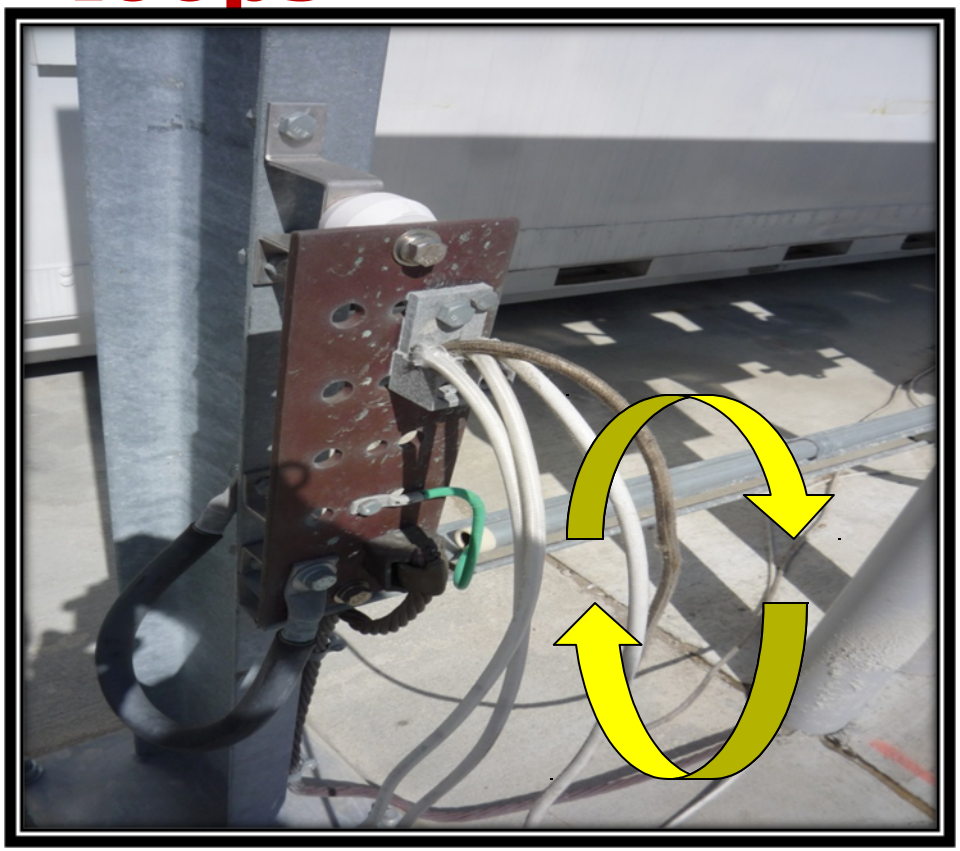
- Meter Applies Voltage
- Then Reads Amperage
- Calculates Resistance
- Meter must create circuit that goes ***through*** **Earth**



Clamp-On Ground Tester

Common Mistake: Ground loops

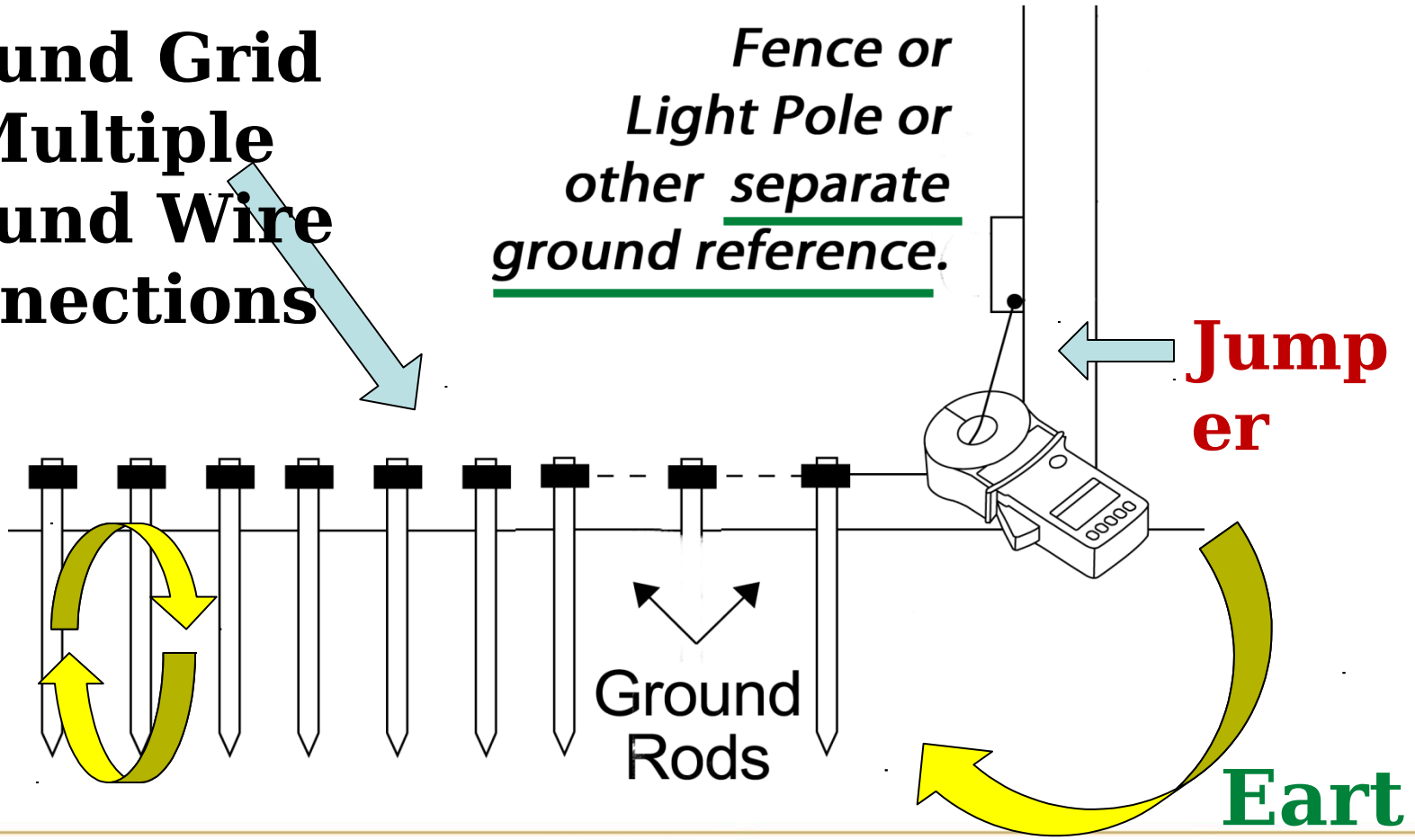




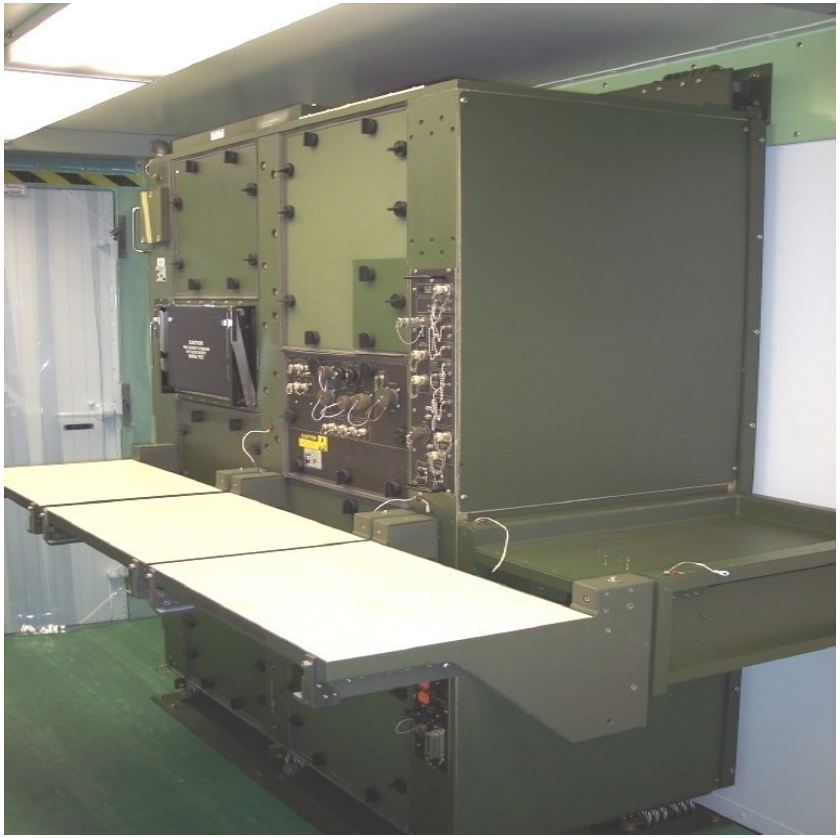
False Reading. Not reading Ground

Clamp-On Ground Tester

Ground Grid or Multiple Ground Wire Connections



How often do I measure grounds?

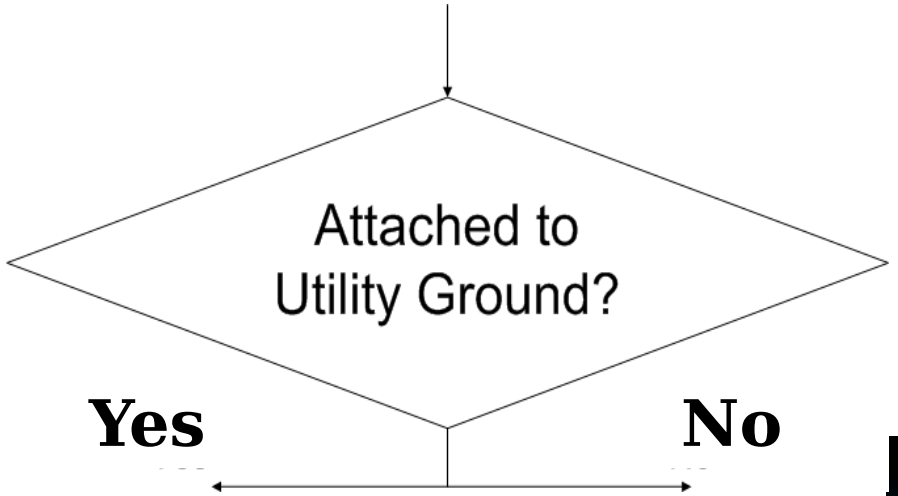


- RTCASS – ground resistance reading **once a year**.
- More often if ground resistance varies.
- Soil moisture affects ground resistance.
- Seasonal differences in soil moisture.

Ground Tester Summary

Garrison MALS

Clamp-On



Deployed MALS

Fall-of-Potential

Questions?